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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,148	06/22/2006	Dagmara Ortmann	291685USOX PCT	1447
22850	7590	04/29/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER NWAONICHA, CHUKWUMA O	
			ART UNIT 1621	PAPER NUMBER
			NOTIFICATION DATE 04/29/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/584,148

**Applicant(s)**

ORTMANN ET AL.

**Examiner**

CHUKWUMA O. NWAONICHA

**Art Unit**

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE/08)
- Paper No(s)/Mail Date 12/05/2007 & 04/05/2008
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Current Status***

1. Claims 1-17 are pending in the application.
2. This action is responsive to Applicants' amendments of 8 February 2008.
3. Receipt and entry of Applicants' amendment is acknowledged.

***Response to Arguments***

Applicants arguments filed 8 February 2008 have been fully considered but they are not persuasive. Applicants argue that Gatrone et al described synthesis and purification, including the use of acidic and basic ion exchange resins for the removal of acidic impurities. Applicants further argue that the use of such ion exchange resins for the removal of impurities after the reaction has been conducted is irrelevant to the presently- claimed process, wherein the at least one basic ion exchange resin is present during the carrying out of the condensation reaction. Applicants point out that the Examiner relies on Martin's disclosure of reacting a particular halogenated phosphorus compound with a hydroxyl compound in the presence of a basic ion exchange resin (page 7922). Applicants further state that the particular reaction disclosed by Martin involves the reaction of 4- nitrophenylphosphorodichloridate, which is a compound containing a P=O group, and which compound is different from, and not suggestive of, the particular dichloro(phenyl)phosphine of Gatrone et al, which contains no O moiety, let alone a P=O group.

Applicants' arguments have been fully considered but are not persuasive because the function of the basic ion exchange resin, like any other basic compound, it function

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is to capture the HCl generated during the reaction, and this process technique is well known to one of ordinary skill in chemistry. Additionally, the starting materials, the product of the reaction and the reaction medium are immaterial in this situation, what is important, is the use of a base (tertiary amine (triethyl amine), pyridine, basic ion exchange resin or mixture of basic compounds) to remove the acidic impurity. Also, the order of addition of the basic compound to the reaction medium does not alter its function as HCl acceptor. The use of a basic compound as HCl acceptor is a common practice in organic reactions, for example; prior arts have documented the use of a base to capture the HCl that is generated in the reaction between a halogenated phosphorus compound and hydroxyl compound, (see US 4,885,401, columns 57-60 and US 2002/0111487, pages 6-7). Therefore, one of ordinary skill in the art would have been motivated to correlate the teachings of Gatrone et al. and Martin in order to remove HCl impurity from the reaction between a halogenated phosphorus compound and hydroxyl compound to produce trivalent organophosphorus compound, which is used in industrial applications.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gatrone et al., {The synthesis and purification of the carbamoylmethylphosphine oxides, Solvent Extraction and Ion Exchange (1987), 5(6), 1075-116} in view of Martin, {Facile reduction in the synthesis of phosphorylcholine affinity columns, Tetrahedron Letters, 37, No. 44, pp. 7921-7924, 1996}.

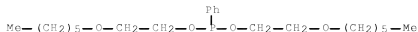
Applicants claim a process for preparing trivalent organophosphorus compounds by condensing a halogenated phosphorus compound with hydroxyl compound **comprising** the use of a basic ion exchange resin; wherein all the other variables are as defined in the claims.

**Determination of the scope and content of the prior art (M.P.E.P. §2141.01)**

Gatrone et al. teach the synthesis and purification of sym. and unsym. carbamoylmethylphosphine oxides and trivalent organophosphorus compounds. By reacting halogenated phosphorus compound with hydroxyl compound to produce a trivalent organophosphorus compound shown below. Several methods for purifying the extractants were studied. The use of acidic and basic ion exchange resins in conjunction was developed for the removal of acidic impurities, which are very

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troublesome to the extraction performances of these compounds. See the abstract and page 1080

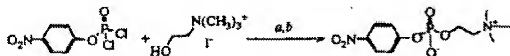


**Ascertainment of the difference between the prior art and the claims (M.P.E.P.,**

**§2141.02)**

Gatrone et al. process for preparing trivalent organophosphorus compounds differs from the instantly claimed process in that applicants' claim a process that employs a solvent as recited in claim 11 while Gatrone et al. teach a process that employed pyridine as a reaction medium. Another difference between applicants claimed invention and the prior art of Gatrone et al. is that applicants claim a process that employs a basic ion exchange resin while Gatrone et al. teach a process that employed acidic and basic ion exchange resins in conjunction.

However, Martin teaches the reacting of halogenated phosphorus compound with hydroxyl compound in the presence of a basic ion exchange resin as shown below. See page 7922.



**Finding of prima facie obviousness—rational and motivation (M.P.E.P., §2142-2143)**

The instantly claimed process for preparing trivalent organophosphorus compounds would have been suggested to one of ordinary skill because one of ordinary

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skill wishing to obtain trivalent organophosphorus compounds is taught to employ the process of Gatrone et al. and Martin.

One of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by varying the process conditions from the teaching of Gatrone et al. and Martin to arrive at the instantly claimed process for preparing trivalent organophosphorus compounds. Said person would have been motivated to practice the teaching of the references cited because they demonstrate that trivalent organophosphorus compounds are useful in industrial applications.

The Examiner notes that varying the reaction conditions in a chemical reaction is a well-known chemical practice to optimize the process efficiency of the system and does not constitute a patentable distinction. Also, merely modifying the process conditions such as temperature and concentration is not a patentable modification absent a showing of criticality. In re Aller, 220 F.2d 454, 105 U. S. P. Q. 233 (C. C. P. A. 1955).

Moreover, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Therefore, one of ordinary skill in the art would have been motivated to correlate the teachings of Gatrone et al. and Martin in order to remove HCl impurity from the reaction between a halogenated phosphorus compound and hydroxyl compound to produce trivalent organophosphorus compound, which is used in industrial applications.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is 571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne (Bonnie) Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for



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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

/Chukwuma O. Nwaonicha/  
Examiner, Art Unit 1621

/Elvis O. Price/  
Primary Examiner, Art Unit 1621

for

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Yvonne (Bonnie) Eyler  
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